

## ABSTRACT

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The present invention relates to a zirconium alloy having excellent corrosion resistance and mechanical properties and a method for preparing a nuclear fuel cladding tube by zirconium alloy. More particularly, the present invention is directed to a zirconium alloy comprising  $\text{Zr-aNb-bSn-cFe-dCr-eCu}$  ( $a=0.05-0.4$  wt%,  $b=0.3-0.7$  wt%,  $c=0.1-0.4$  wt%,  $d=0-0.2$  wt% and  $e=0.01-0.2$  wt%, provided that  $\text{Nb+Sn}=0.35-1.0$  wt%), and to a method for preparing a zirconium alloy nuclear fuel cladding tube, comprising melting a metal mixture comprising of the zirconium and alloying elements to obtain ingot, forging the ingot at  $\beta$  phase range,  $\beta$ -quenching the forged ingot at  $1015-1075$  °C, hot-working the quenched ingot at  $600-650$  °C, cold-working the hot-worked ingot in three to five passes, with intermediate vacuum annealing and final vacuum annealing the worked ingot at  $460-540$  °C, which can be applied to the core components in a light water and a heavy water atomic reactor type nuclear power plant.